REMARKS

In the Office Action Summary, the Examiner noted that claims 1-24, 26, 27, 29-31 and 33 were pending in the application and in the Detailed Action claims 1-24, 26, 27, 29-31 and 33 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patents 5,918,223 to Blum et al. and 5,616,876 to Cluts (References A and B, respectively). It is noted that the Preliminary Amendment filed by certificate of mail on September 1, 2000 cancelled claim 21, as well as claims 25, 28 and 32. Since claims 34-43 have been added, claims 1-20, 22-24, 26, 27, 29-31 and 33-43 remain in the case. The Examiner's rejections are traversed below.

The Application

The application is directed to creating and using a database of musical recordings that can be searched based on human perception of the recordings based on parameters extracted from the recordings. Definitions of thirteen parameters that could be extracted are provided on pages 15-17 of the application. The extracted parameters are combined with a weighting assigned to each parameter to generate a single number representing a descriptor for each recording. Human listeners provide an indication of their perception of an initial set of recordings and the weightings assigned to the parameters extracted from the initial set of recordings are adjusted to match the human perception of the initial set of recordings. The adjustments to the weightings of the initial set of recordings are applied to the remaining recordings in the database. In one embodiment, subsets of the parameters are combined by formulas that correspond to terms easily recognizable by human listeners, such as energy, happiness and danceability, as described on pages 13 and 14, and the adjustments are made based on how the human listeners rank musical recordings according to each of these terms.

The Prior Art:

U.S. Patent 5,918,223 to Blum et al.

Blum et al. patent is directed to content-based analysis, storage, retrieval and segmentation of audio information. The cited portions of Blum et al. describe analyzing digital audio based on "amplitude (loudness), pitch, bandwidth, bass, brightness, and MEL-frequency cepstral coefficient (MFCCs)" (column 6, lines 25-27). These values are placed in an array of data values called "trajectories," each of which is subjected to computations including the first derivative, mean and standard deviation. The latter two statistical values are "weighted by the amplitude trajectory so that perceptually important sections of the sound are emphasized"

(column 6, lines 40-42). These features, and optionally the duration of the sound, are stored for use in retrieval. The details of how these data values are calculated include peak detection, pitch estimation, and estimating "the actual fundamental" (column 10, line 24) by optionally calculating "an amplitude-weighted version of the deviation (weight) and the amplitude of the peak" (column 10, line 67 to column 11, line 1). The only modification of the resulting scores that has been found is in the "PITCH TRAJECTORY CLEANUP" section at column 11, line 45 to column 12, line 47. The final result of the analysis is used to classify sounds using a decision tree and segmentation, as described in columns 22-25.

U.S. Patent 5,616,876 to Cluts

The Cluts patent is directed to a system for selecting music on the basis of subjective content. The system accesses musical recordings by artist and album and provides the ability to search for songs similar to a song being played. This is accomplished by assigning a style table to each song and "weighting each style as it pertains to each song" (column 14, lines 45-46). The listing of possible style categories ... and ... weightings [assigned] to each style category ... are performed [or provided] by the editor that creates the style table" (column 14, lines 47-50). "Human beings work well as editors to provide the required editorial content" (column 14, lines 55-56) and are apparently used in the system taught by Cluts. A "system operator creates an artist level default style table for all of the artists who songs appear on the system" (column 15, lines 28-29) and individual editors "determine which style categories to use and the weightings assigned to each artist" (column 15, lines 30-31). "The default style tables may include any number of style categories associated with any number of artists" (column 15, lines 32-33). The examples of styles mentioned in Cluts are commonly referred to as "genres," such as 1960s, 1970s, British Invasion, Rock Park Innovators for "The Beatles" and New York City Rap, Los Angeles Rap, Male Rap and Female Rap (see column 15, lines 37-55).

Rejection under 35 U.S.C. § 103(a)

In item 4 on pages 3-6 of the Office Action, claims 1-22 (presumably 21), 22-24, 26, 27, 29-31 and 33 were rejected under 35 U.S.C. § 103(a) as unpatentable over Blum et al. in view of Cluts. In setting forth the rejection, common language in multiple claims was asserted to be taught by specified portions of Blum et al. or Cluts. The cited portions of these references and other portions that appear to be relevant are discussed above. Although Blum et al. and Cluts are analogous art, the combination does not teach the claims as set forth in this Amendment.

It is submitted that it would not be obvious to modify the system taught by Blum et al. to adjust the weightings of machine-calculated data values based on perceptions of the user as taught by Cluts with respect to style or genre. According to Cluts, the style or genre is assigned in the first place by a human being, the system operator, and therefore, permitting others to adjust the weightings is merely a matter of granting permission to access data generated by a human being. On the other hand, Blum et al. discloses a program that creates weightings according to a formula and cleans up the data. Neither Blum et al., nor Cluts teach or suggest "**adjusting** the weightings for the parameters to find a set of weightings where each computed descriptor for each recording most closely matches perceptions reported for the recording by one or more human listeners" (e.g., claim 1, last 3 lines, emphasis added). All of the other independent claims (except claim 26) and claim 27 recite limitations similar to the last operation recited in claim 1. Therefore, it is submitted that claims 1, 3, 5, 6, 10, 18 and 27, as well as claims 2, 4, 8, 9, 11-17, 19, 20, 22-24, 29 and 33 which depend therefrom, patentably distinguish over Blum et al. in view of Cluts for the reasons set forth above.

In addition, claim 18 recites "computing ... a number which represents the difference between the recordings ... and ... assembling the computed difference numbers into a database" (claim 18, lines 6-8) and claim 26 recites "a database containing computed difference numbers" (claim 26, line 4). Nothing was cited or has been found in Blum et al. in view of Cluts that even suggests storing computed difference numbers in the database to speed the recognition of similar recordings. Therefore, it is submitted that claim 26 and claim 30 which depends there-from distinguishes over Blum et al. in view of Cluts and claim 18 and claims 19, 20 and 22-24 which depend therefrom further patentably distinguish over Blum et al. in view of Cluts for this reason.

Furthermore, claim 27 has been amended to recite "extracting from each recording of the plurality of recordings at least two numeric parameters selected from dynamic range, loudness, harmonicity, rhythm strength, rhythm complexity, articulation, attack, note duration, tempo, sound salience and key" (claim 27, lines 3-5). While there may be some similarity between one or two of these parameters, and the data values taught by Blum et al., there is no suggestion that the data values taught by Blum et al. are "selected from" (claim 27, line 4) these parameters. Therefore, for this additional reason, it is submitted that claim 27 further patentably distinguishes over Blum et al. in view of Cluts.

New Claims

Claims 34-43 have been added to recite the types of parameters that may be extracted in the extracting operations recited in claims 1, 3, 5, 6 and 10. As discussed above with respect to claim 27, while there may be some similarity between one or two of the parameters in claims 34, 36, 38, 40 and 42, and the data values taught by Blum et al., there is no suggestion that the data values taught by Blum et al. are "selected from" (e.g., claim 34, line 2) the parameters listed in these claims. Furthermore, no mention of the parameters listed in claims 35, 37, 39, 41 and 43 has been found in Blum et al. or Cluts. For the above reasons, it is submitted that claims 34-43 further patentably distinguish over Blum et al. in view of Cluts.

Request for Examiner Interview

If the rejection of all of the claims as unpatentable over Blum et al. in view of Cluts is not withdrawn, the Examiner is respectfully requested to contact the undersigned by telephone to arrange an Examiner Interview prior to issuing the next Office Action to discuss what amendments to the claims might place the claims in condition for allowance.

Summary

It is submitted that the reference cited by the Examiner, taken individually or in combination, do not teach or suggest the features of the present claimed invention. Therefore, it is submitted that claims 1-20, 22-24, 26, 27, 29-31 and 33-43 are in a condition suitable for allowance. Reconsideration of the claims and an early Notice of Allowance are earnestly solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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